

# RADX® COTS PXIe-GPUs: Catalyst-GPU™ & Trifecta-GPU™

Bring the Power of **Easy-to-Program, NVIDIA® GPUs** to PXIe Systems for Advanced Graphics, GPU-Accelerated Video, Image & Signal Processing & ML / DL AI Apps

- **Easy-to-Program via LabVIEW, MATLAB, Python, C/C++** using NVIDIA CUDA™ or OpenCL® for Accelerated Signal, Image & Video Processing and ML/DL Inference Apps in PXIe Systems, with Optimized Support for All Popular Libraries & Frameworks:

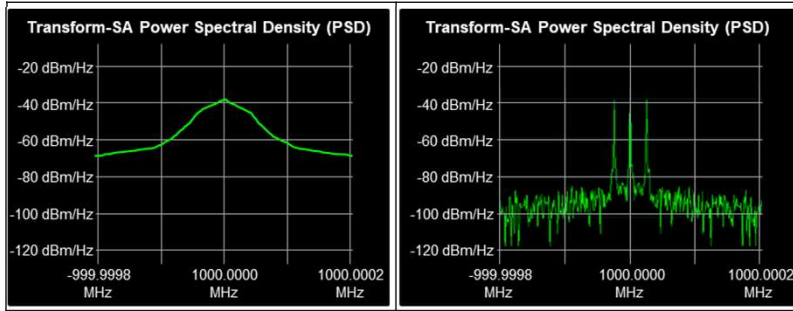
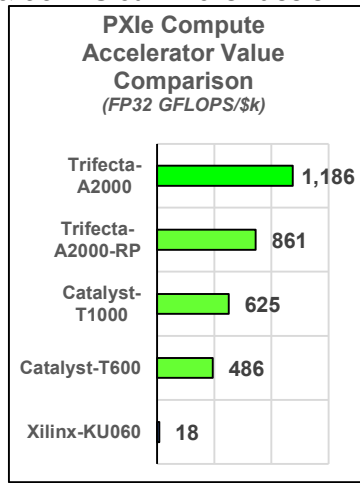
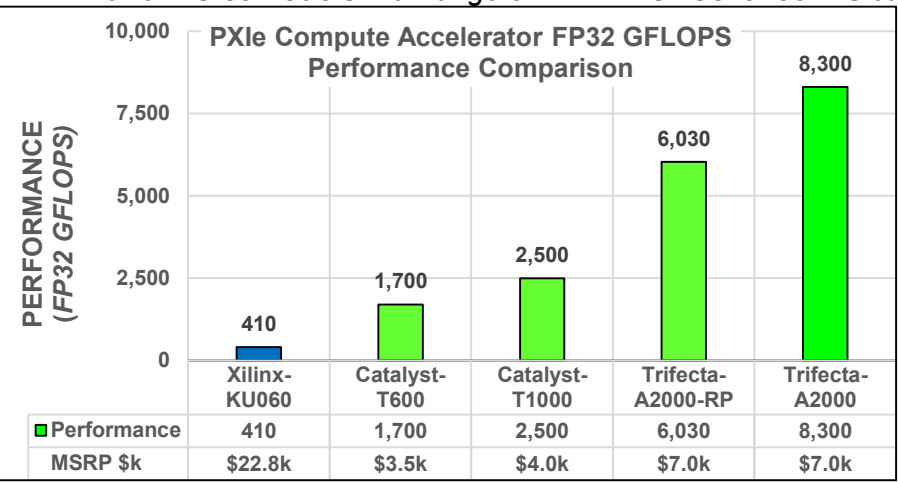


## • PXIe-GPUs Eliminates the Need for Separate GPU Servers

- **Accelerated Image, Video & Signal Processing:** 1.75 to 8.3 FP32 TFLOPS for up to 50x Higher Compute Performance vs. Xilinx KU060 FPGAs and Up to 100x Higher Compute Performance vs. Popular PXIe Embedded Controller CPUs
- **NVENC / NVDEC HW Accelerated Video Encoding / Decoding Engines** for Real-Time 2k/4k/8k Video Compression & Decompression at up to 100x CPU Performance Levels
- **2D/3D Graphics:** Up to ~100x Higher Performance vs. Embedded Controller GPUs
- **ML/DL Inference:** Up to ~200x Higher than Embedded Controller CPUs via LabVIEW/DeepLTK, MATLAB, TensorFlow or PyTorch
- **1- and 2-Slot Models** with range of NVIDIA GPUs for 38W/Slot & 58W/Slot PXIe Chassis

## • Enhance LPI Signal Detection

- **RADX PXIe-GPUs Support Real-Time 1+ MS FFTs** to Reduce Resolution Bandwidth & Average Noise Floor and Dramatically Improve LPI Signal Detection & Classification in PXIe Signal Analyzers



32 kilosample (kS) FFT	1 Megasample (MS) FFT
1.25 MHz BW TDMS Signal	
87.74 Hz RBW	2.74 Hz RBW (32x Gain)
-70 dBm / Hz Avg. Noise Floor	-100 dBm / Hz Avg. Noise Floor (~30 dB Gain)
~2.5 msec Total Time (CPU) (on NI PXIe-8881 Intel Xeon W-2245 - \$15k)	~2.5 msec Total Time (GPU) (on RADX Catalyst PXIe-GPU-T1000 - \$4k)



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# RADX® Catalyst- and Trifecta-GPU COTS PXIe-GPU Module Specifications

(Subject to Change Without Notice)

#	Parameter	Catalyst-GPU™		Trifecta-GPU™		
		PXIe-GPU-T600-4GB-1SP (1-Slot, 38W, 4HP)	PXIe-GPU-T1000-8GB-1SP (1-Slot, 58W, 4HP)	PXIe-GPU-A2000-8GB-1SM-RP (1-Slot, 35W, 4HP)	PXIe-GPU-A2000-8GB-1SM (1-Slot, 58W, 4HP)	PXIe-GPU-A2000-8GB-2SM (2-Slots, 29W/Slot, 8HP)
1	NVIDIA GPU:	NVIDIA Quadro T600 (Turing)	NVIDIA Quadro T1000 (Turing)	NVIDIA RTX-A2000 MXM 3.1 Type A (Ampere)		
2	FP32 Peak Perf: vs. KU060 / PXIe-7915	<b>1.7 FP32 TFLOPS</b> 4.2x PXIe-7915	<b>2.5 FP32 TFLOPS</b> 6.1x PXIe-7915	<b>6.03 FP32 TFLOPS</b> 14.7 PXIe-7915	<b>8.3 FP32 TFLOPS</b> 20.2x PXIe-7915	
3	CUDA & Other Cores:	640 CUDA	896 CUDA	2,560 CUDA / 20 RT / 80 TENSOR		
4	Real-Time Video Encoder/Decoder Support:	1 x NVENC (6 <sup>th</sup> Gen / 4 Streams) and 1 x NVDEC (6 <sup>th</sup> Gen / Unlimited Streams). See <a href="https://tinyurl.com/579y4u69">https://tinyurl.com/579y4u69</a>		1 x NVENC (7 <sup>th</sup> Gen / Unlimited Streams) and 2 x NVDEC (7 <sup>th</sup> Gen / Unlimited Streams). See <a href="https://tinyurl.com/579y4u69">https://tinyurl.com/579y4u69</a>		
5	On-Board Memory:	4 GB GDDR6 with 128-bit I/F	8 GB GDDR6 with 128-bit I/F	8 GB GDDR6 with 192-bit I/F		
6	On-Board Memory BW:	160 GB/Sec	160 GB/Sec	~115 GB/Sec	192 GB/Sec	
7	Total Graphics Power (W):	<b>~38W / Slot (~38W Total)</b>	<b>~58W / Slot (~58W Total)</b>	<b>~35W / Slot (~35W Total)</b>	<b>~58W / Slot (~58W Total)</b>	<b>~29W / Slot (~58W Total)</b>
8	Supported PXIe Chassis:	All 38W / Slot NI & 3 <sup>rd</sup> Party PXIe Chassis	NI PXIe 58W / Slot Chassis (e.g., PXIe-1092, -1095, etc.)	All 38W / Slot NI & 3 <sup>rd</sup> Party PXIe Chassis	NI PXIe 58W / Slot Chassis (e.g., PXIe-1092, -1095, etc.)	All 38W / Slot NI & 3 <sup>rd</sup> Party PXIe Chassis
9	Display I/Fs & Resolutions:	4 x Mini Display Port 1.4a I/Fs (HDMI 2.1) with 4k+ Resolution @ 120Hz or 8K Resolution at 60Hz with 10-bit Color				
10	Thermal Solution:	Fan or Passive Al Heat Sink (1- Slot) / ~15 LFM Air Flow		Passive Aluminum Heat Sink (1- or 2-Slot) / ~15 LFM Air Flow		
11	GPU / Module PCIe I/F:	GPU: PCIe Gen 3 x16 / PXIe Module: PCIe Gen 4 x8 (Backplane Limit for Most Chassis is PCIe G3 x8 or x4)		GPU: PCIe Gen 4 x16 / PXIe Module: PCIe Gen 4 x8 (Backplane Limit for Most Chassis is PCIe G3 x8 or x4)		
12	Module Form Factor:	Single (4HP), 3U PXIe Peripheral / 3U PCIe Type 2 Slot with XJ3 and XJ4 Connectors				Dual (8HP), 3U PXIe Peripheral / 3U PCIe Type 2 Slot with XJ3 & XJ4
13	Module Dimensions:	~0.4 kg (0.9 lbs) / 100 mm H x 160 mm D x 20.32 mm W (4HP)				0.5 kg (1.1 lbs) / 100 mm H x 160 mm D x 40.64 mm W (8HP)
14	Op & Storage Temps:	Op Temp: 0° to 55° C, 10% to 90%, Non-Condensing, Storage Temp: -40° to +85° C				
15	Certifications and Designed-to-Meet Specifications:	MXM and PCIe GPUs Certified for FCC Part 15-B Class A, CE and RoHS. Module Certified for CE & RoHS and Designed to Meet FCC Part 15-B Class A / EN55022 Class A / EN55024 / EN300386-2 / MIL-PRF-28800G Class 3 (Class 2 Optional). <i>Additional Module Level Certs May be Available – Ask RADX for a Quotation.</i>				
16	Operating System Support:	Windows 10, Windows 11 and Linux (64-bit, Popular Distributions)				
17	Graphics APIs:	DirectX 12, Shader Model 5.1, OpenGL 4.6, Vulkan 1.2 (or Later)				
18	Compute APIs:	CUDA Toolkit 8.0+, CUDA Compute V8+, OpenCL™ 1.2+, OpenCV 3.4+ & CUDA-X AI				
19	RDMA / Peer-to-Peer:	NVIDIA GPUDirect Support for Teledyne SP Devices Digitizers. Availability for Trifecta, Catalyst and Other 3 <sup>rd</sup> Party PXIe Modules TBD.				
20	Programming & Framework Support:	NI LabVIEW, Python, C/C++ or MATLAB; MathWorks MATLAB, Simulink, ML, DL and Parallel Toolboxes; RAPIDS cuSignal & AI, NGENE cuLAB and DeepLTK, PyTorch, TensorFlow, FFmpeg, Ansys and others.				
21	Programming Examples:	RADX Transform-X Libraries and Examples for Python, MATLAB and C/C++				
22	Standard Warranty:	1 Year Return to Factory Standard (Extended Warranty and Technology Insertion Options Available)				
23	Export Control Related Info:	<b>ECCN: EAR99 (&lt; 8 TFLOPS) / HSC: 84733092</b>			<b>ECCN: 3A991.A (≥ 8 TFLOPS) / HSC: 84733092</b>	
24	COO / TAA / BAA:	Country of Origin: US / TAA & BAA Compliant		Country of Origin: TW / TAA & BAA Compliant		
25	QTY 1 FOB SJC MSRP:	\$3,499	\$3,999	\$6,999	\$6,999	\$7,999
26	Leadtime / Availability:	~30 Day Leadtime Typical for Small Orders				
27	Value (GFLOPS / \$k MSRP):	486 GFLOPS/\$k (~27x NI PXIe-7915 @ 18 GFLOPS / \$k)	625 GFLOPS/\$k (~35x NI PXIe-7915 @ 18 GFLOPS / \$k)	861 GFLOPS/\$k (~48x NI PXIe-7915 @ 18 GFLOPS / \$k)	1,186 GFLOPS/\$k (~66x NI PXIe-7915 @ 18 GFLOPS / \$k)	1,038 GFLOPS/\$k (~58x NI PXIe-7915 @ 18 GFLOPS / \$k)



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